CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-27

March 9, 1977

1. Name of fault: Country Club fault.

2. Location of fault: Saticoy 7.5 minute quadrangle, Ventura County.

3. Reason for zoning: Part of a 10-year program.

4. References:

a) Nichols, D.R., 1974, Surface faulting in Seismic and Safety Elements of the Resource's Plan and Program: Ventura County Planning Department, section II, p. 1-35, plate 1.

b) Quick, G.L., 1974, Preliminary microzonation for surface faulting for surface faulting in Ventura, California area in Geology, seismicity, and environmental impact: Association of Engineering Geologists, Special Publication, p. 257-262. Note: Basically contains only information obtained from others; no new data. Not discussed herein.

c) Sarna-Wojcicki, A.M., Williams, K.M., and Yerkes, R.F., 1976, Geology of the Ventura fault, Ventura County, California: U.S. Geological Survey, Miscellaneous Field Studies Map, MF-781, map scale 1:60,000.

d) Turner, J.M., 1975, Ventura County water resources management study, aquifer delineation in the Oxnard-Calleguss area, Ventura County in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-45, 10 plates.

e) Turner, J.M., and Mukae, M.M., 1975, Ventura County water resources management study, geologic formations, structures and history in the Santa Clara-Calleguss area in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-28, 2 plates.

f) Weber, F.H., Jr., Cleveland, G.B., Kahle, J.E., Kiessling, E.F., Miller, R.V., Mills, M.F., Morton, D.M., and Cilweck, B.A., 1973, Geology and mineral resources study of southern Ventura County, California: California Division of Mines and Geology, Preliminary Report 14, 102 p., 5 plates, 9 figures; map scale 1:48,000.

g) Weber, F.H., Jr., Kiessling, E.W., Sprotte, E.C., Johnson, J.A., Sherburne, R.W., and Cleveland, G.B., 1975 ~~[(Preliminary draft of 2/27/76)]~~, Seismic hazards study of Ventura County, California: California Division of Mines and Geology, Open File Report 76-5LA, 396 p., 9 plates, map scale 1:48,000.

5. Summary of available information:

The Country Club fault was zoned as a secondary fault hazard by Nichols (1974), in the Ventura County Seismic and Safety Element. The fault was first postulated by geohydrologists to explain the difference in depth to the water table (as much as 100 feet) near Saticoy ~~[(Mukae and]~~ (Turner and Mukae, 1975, p. 17). Turner and Mukae describe the fault as a steeply south-dipping reverse fault with an "appreciable left-lateral displacement." They feel, as did Quick (1973), that the Country Club

fault may be displaced by the Ventura fault. Cilweck (personal communication, 1976) notes that there is a definite ground water barrier in the younger fan deposits near Saticoy, and thus, the Country Club fault might be Holocene.

Two sources (Weber, et al., 1975, and Sarna-Wojcicki, et al., 1976) note lineaments which they attribute as possibly being caused by the Country Club fault. For the sake of clarity, I have divided these lineaments into two sets, set A and set B (see plate 2). Set A more closely follows the postulated water barrier of Mukae and Turner (1975). The water barrier shown is on the base of fresh water, at a depth of about 500 feet. Assuming the usual density of well-data (well locations are not now on hand), these lineaments are close enough to the water barrier to possibly be related.

Set B (plate 2) lies north of the Country Club fault, and also is divergent from the barrier. These lineaments more closely parallel the surface trace of Ventura fault and could be considered to be a possible extension since they are almost aligned with this fault. However, Turner (plate 8, crossection), shows no groundwater discontinuities in this area. Thus, either these features are not due to faulting or the faults, at depth, could not be detected as water barriers.

6. Interpretation of aerial photographs:

Fairchild Aerial Photographs, flight 297B, numbers A7 to A10, scale 1:24,000, flown in 1920, were viewed stereoscopically. I was unable to verify the lineaments noted by Weber, et al. (1975). The one remaining lineament in set A, which Sarna-Wojcicki, et al (1976) depicted as a scarp, may be an old creek channel. The lineaments in set B, however,

are not all so easily dismissed. There seems to be some difference in the growth rates of trees on either side of the lineaments (as noted on plate 2). Photos of set B taken in 1927 (Fairchild flight C104, scale 1:18,000) also show this difference. These growth patterns do not appear to be due to the trees having been planted at different times, or influenced by man in any way since (1) the growth differences trend oblique to the rows of trees and (2) trees planted between 1920 and 1927 show differences in growth rates which are similar to those planted prior to 1920. There does appear to be a scarp through West Saticoy, which was identified by Sarna-Wojcicki, et al (1976).

7. Field observations:

On May 5, 1976, I spot checked the areas where Sarna-Wojcicki, et al. (1976) depict lineaments. While the vegetational lineaments were not noted, a definite, broad escarpment, north side down, three to five feet high (maximum) was noted immediately south of the freeway (Highway 126, which follows old Kimball Road in part). This area is now either intensively farmed or has been modified for the freeway and residential development. The scarp can also be noted where it crosses Darling Road. This scarp slopes about 10° north, and is ill-defined at its base (which may be due to modification by man). The scarp could not be followed on the ground between these two sites since houses cover the area, however, these sites lie on an air photo lineament of Sarna-Wojcicki, et al., and show a similar sense of (possible) displacement and thus, may be two points on the same feature.

8. Conclusions: There is no surface evidence for the existence of the Country Club fault as shown by Weber, et al. (1975). The lineaments (noted as set A) along this trend either could not be verified as faults or could be explained by other causes.

It has not been demonstrated that the lineaments in set B was created by faulting. Indeed, Turner (1975, plate 8) and Mukae and Turner (1975, plate 1) show no fault or ground water barrier in this area. Many of the lineaments do exist and faulting could be one possible origin for them; however, it has not been satisfactorily demonstrated that these lineaments are fault-produced or fault related.

9. Recommendations: Given the data summarized above, under the present criteria neither the mapped "trace" of the Country Club fault (i.e., ground water barrier) nor the lineaments discussed should be zoned at this time.

10. Investigating geologist's name; date:

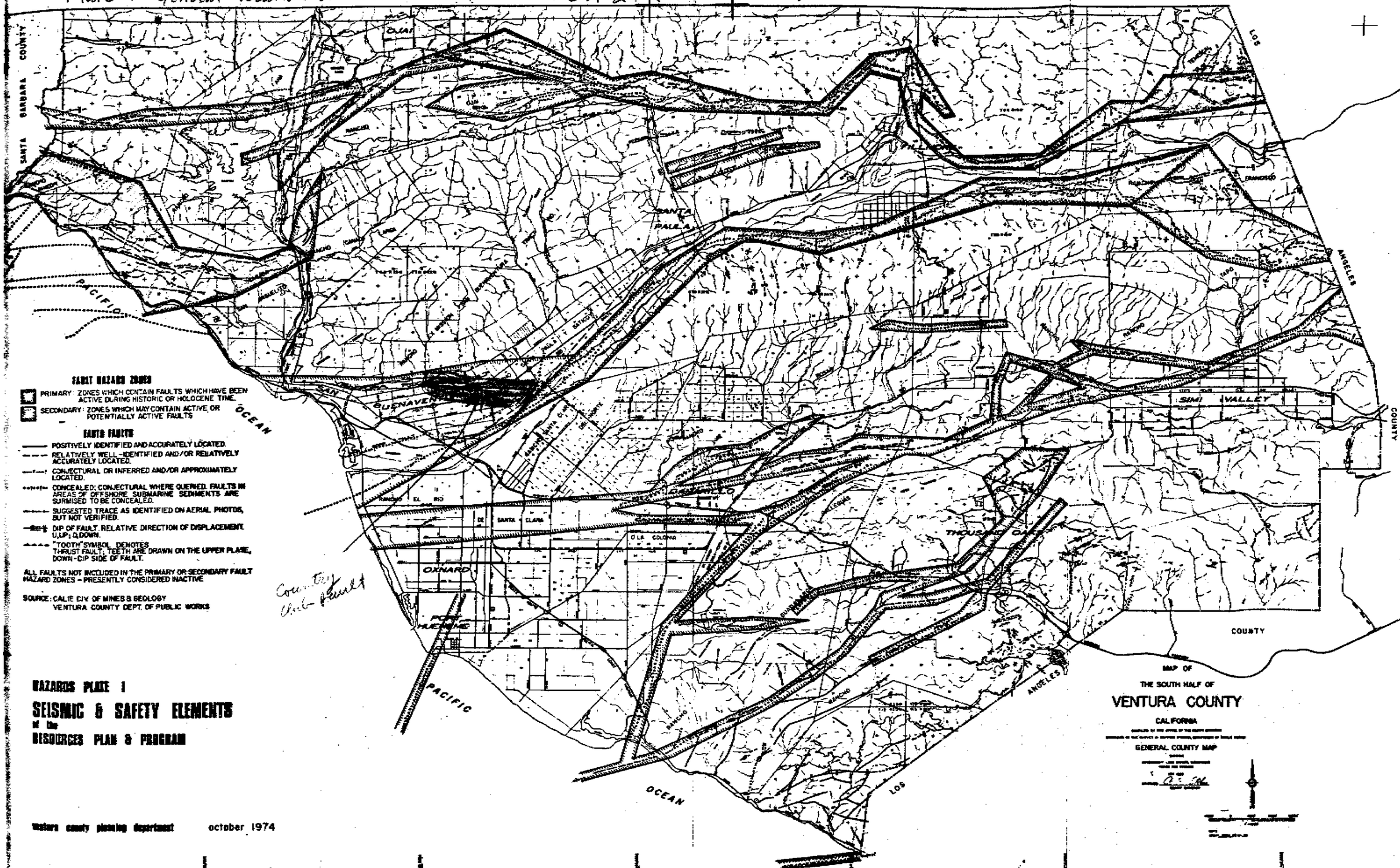
Theodore C. Smith

Theodore C. Smith
Assistant Geologist
March 9, 1977

I concur with the recommendations; lineaments do not define a well-defined fault.
EHH
3/23/77

FER 27

Plate 1. General location of fault discussed in FER-27 (after Nichols, 1974).



FAULT HAZARD ZONES

- PRIMARY: ZONES WHICH CONTAIN FAULTS WHICH HAVE BEEN ACTIVE DURING HISTORIC OR HOLOCENE TIME.
- SECONDARY: ZONES WHICH MAY CONTAIN ACTIVE OR POTENTIALLY ACTIVE FAULTS

FAULTS

- ——— POSITIVELY IDENTIFIED AND ACCURATELY LOCATED.
- – – – RELATIVELY WELL-IDENTIFIED AND/OR RELATIVELY ACCURATELY LOCATED.
- —?—?— CONJECTURAL OR INFERRED AND/OR APPROXIMATELY LOCATED.
- ·····? CONCEALED; CONJECTURAL WHERE QUERIED. FAULTS IN AREAS OF OFFSHORE SUBMARINE SEDIMENTS ARE SURMISED TO BE CONCEALED.
- ——— SUGGESTED TRACE AS IDENTIFIED ON AERIAL PHOTOS, BUT NOT VERIFIED.
- —▷— DIP OF FAULT, RELATIVE DIRECTION OF DISPLACEMENT. U,UP; D,DOWN.
- ——— "TOOTH" SYMBOL DENOTES THRUST FAULT. TEETH ARE DRAWN ON THE UPPER PLANE, DOWN-DIP SIDE OF FAULT.

ALL FAULTS NOT INCLUDED IN THE PRIMARY OR SECONDARY FAULT HAZARD ZONES – PRESENTLY CONSIDERED INACTIVE

SOURCE: CALIF. DIV. OF MINES & GEOLOGY
VENTURA COUNTY DEPT. OF PUBLIC WORKS

HAZARDS PLATE 1

SEISMIC & SAFETY ELEMENTS
of the
RESOURCES PLAN & PROGRAM

MAP OF
THE SOUTH HALF OF
VENTURA COUNTY
CALIFORNIA

GENERAL COUNTY MAP

ventura county planning department october 1974